

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

Muller-27

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

To Be Assigned

09/890696

INTERNATIONAL APPLICATION NO.
PCT/DE00/00357INTERNATIONAL FILING DATE
7 February 2000PRIORITY DATE CLAIMED
9 February 1999

TITLE OF INVENTION

Microemulsion Containing Alkanolammonium Salts of Fatty Alcohol Sulfates and/or
Alkylpolyalkyleneglycoethersulfates [as amended]

APPLICANT(S) FOR DO/EO/US

Michael Brock, Martin Stolz, Sabine Diesveld-Koller, Eva-Maria Koberstein, Ursula Michel, and Heinz Napierala

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Acknowledgment postcard

U.S. APPLICATION NO. (IF KNOWN) SEE 37 CFR 1.51
To Be Assigned **09/890696**

INTERNATIONAL APPLICATION NO.
PCT/DE00/00357

ATTORNEY'S DOCKET NUMBER
Muller-27

24. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **\$1000.00**
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **\$860.00**
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$710.00**
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$690.00**
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **\$100.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =

CALCULATIONS PTO USE ONLY

\$860.00

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	11 - 20 =	0	x \$18.00
Independent claims	1 - 3 =	0	x \$80.00

\$0.00

\$0.00

Multiple Dependent Claims (check if applicable). ☒

\$270.00

TOTAL OF ABOVE CALCULATIONS =

\$1,130.00

☐ Applicant claims small entity status. (See 37 CFR 1.27). The fees indicated above are reduced by 1/2.

\$0.00

SUBTOTAL =

\$1,130.00

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00

TOTAL NATIONAL FEE =

\$1,130.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

\$0.00

TOTAL FEES ENCLOSED =

\$1,130.00

Amount to be:	\$
refunded	
charged	\$

- a. ☒ A check in the amount of **\$1,130.00** to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **02-4345**. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

C. James Bushman, Reg. No. 24,810
Browning Bushman
5718 Westheimer, Suite 1800
Houston, Texas 77057-5771
Tel.: (713) 266-5593
Fax: (713) 266-5169

SIGNATURE

C. James Bushman

NAME

24,810

REGISTRATION NUMBER

August 3, 2001

DATE

09/890696

CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10)

Applicant(s): Michael Brock, et al.

Docket No.

Muller-27

Serial No. To Be Assigned	Filing Date Herewith	Examiner To Be Assigned	Group Art Unit To Be Assigned
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Invention: Microemulsion Containing Alkanolammonium Salts of Fatty Alcohol Sulfates and/or Alkylpolyalkyleneglycolether Sulfates [as amended]

I hereby certify that the following correspondence:

Transmittal Letter to the DO/EO/US concerning a Filing Under 35 USC 371 and all referenced enclosures

(Identify type of correspondence)

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: The Assistant Commissioner for Patents, Washington, D.C. 20231 on

August 8, 2001

(Date)

Jan C. Lipscomb

(Typed or Printed Name of Person Mailing Correspondence)

Jan C. Lipscomb

(Signature of Person Mailing Correspondence)

EL010850625US

("Express Mail" Mailing Label Number)

Note: Each paper must have its own certificate of mailing.

09/890696

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
ACTING AS RECEIVING OFFICE FOR THE PCT

In re Application of: § Attorney Docket No.: Muller-27
§
Michael Brock, Martin Stolz, §
Sabine Diesveld-Koller, §
Eva-Maria Koberstein, Ursula Michel, §
and Heinz Napierala §
§
Int'l. Appln. No.: PCT/DE00/00357 §
§
Int'l. Filing Date: 7 February 2000 §
§
U.S. Serial No.: To Be Assigned §
§
U.S. Filing Date: Herewith §
§
For: *Microemulsion Containing Alkanol-* §
ammonium Salts of Fatty Alcohol §
Sulfates and/or Alkylpolyalkylene- §
glycoether Sulfates [as amended] §

PRELIMINARY AMENDMENT

Box PCT
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Kindly amend the above-identified application as follows:

In the Title

On page 1, in lines 1-2, kindly delete the title and insert therefor the following new title:

New Title

MICROEMULSION CONTAINING ALKANOLAMMONIUM SALTS OF FATTY
ALCOHOL SULFATES AND/OR ALKYL POLYALKYLENEGLYCOETHERSULFATES

In the Specification

On page 1, after the title and before line 5, please insert the following new heading and
subheading:

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

On page 1, at line 9, please insert the following new subheading:

DESCRIPTION OF THE PRIOR ART

On page 5, before line 1, please insert the following new heading:

SUMMARY OF THE INVENTION

On page 5, at line 15, please insert the following new heading:

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the Claims

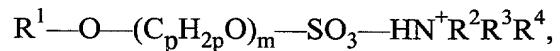
Please cancel Claims 1-10.

Please add the following new claims, 11-17:

New Claims

11. (New) A microemulsion comprising:

(A) 0.5 to 70% by weight of the alkanolammonium salts of alkylsulfates and alkylpolyalkyleneglycoethersulfates having the structure:



wherein

R^1 is a C_8 - to C_{20} -hydrocarbon residue,

p is an integer from 2 to 5, wherein p can be different for each m,

R^2 is H, a C_1 - to C_6 -alkyl, or a C_2 - to C_4 -hydroxyalkyl,

R^3 is H, a C_1 - to C_6 -alkyl, or a C_2 - to C_4 -hydroxyalkyl,

R^4 is a C_2 - to C_4 -hydroxyalkyl, and

m is an integer from 0 to 7,

and mixtures thereof;

(B) 20 to 95% by weight water;

(C) 0.1 to 20% by weight of at least one oil component; and

(D) 0.1 to 20% by weight of at least one mono- or polyvalent C_2 - to C_{24} -alcohol,
each based on the total composition of the microemulsion.

12. **(New)** The microemulsion according to claim 11, wherein the alkanolammonium salts of the alkylsulfates and/or alkylpolyalkyleneglycol ethersulfates comprise the following residue or indices:

R^1 is a linear or saturated C_{12} - to C_{16} -alkyl residue,

p is 2 or 3, wherein p can be different for each m,

R^2 is H or hydroxyisopropyl,

R^3 is H or hydroxyisopropyl,

R^4 is hydroxyisopropyl, and

m is an integer from 0 to 2.

13. **(New)** The microemulsion according to any one of claims 11 and 12, wherein the microemulsion contains component

(A) in an amount of 2 to 60% by weight,

(B) in an amount of 30 to 80% by weight,

(C) in an amount of 0.5 to 15% by weight, and

(D) in an amount of 0.1 to 9% by weight.

14. **(New)** The microemulsion according to any one of claims 11 and 12, further containing

at least one of the following components:

- (E) 0 to 20% by weight of at least one surfactant,
- (F) 0 to 20% by weight of at least one electrolyte, and
- (G) 0 to 10% by weight of at least one additive.

15. **(New)** The microemulsion according to claim 14, containing at least one of the following components:

- (E) at least one additional surfactant comprising a triglyceride alkoxylated with ethyleneoxide and/or propyleneoxide and at least partially esterified with a C₆- to C₂₂-fatty acid, and
- (F) at least one additive comprising a poly(C₂- to C₄-)alkyleneglycol having a molecular weight of up to 1,500 g/mole.

16. **(New)** The microemulsion according to any one of the claims 11 and 12, wherein the oil component (C) contains one or more components selected from the group consisting of lecithins; mono-, di-, and/or triglycerides of saturated and/or unsaturated, branched and/or linear carboxylic acids having chain lengths of from 8 to 24 carbon atoms; branched and/or linear hydrocarbons; waxes; petroleum jelly; paraffin oils; polyolefins; silicone oils; esters of saturated, unsaturated, and/or aromatic, branched and/or linear carboxylic acids having chain lengths of from 3 to 30 carbon atoms; and saturated and/or unsaturated, branched and/or linear alcohols having chain lengths of from 3 to 30 carbon atoms.

17. **(New)** The microemulsion according to any one claims 11 and 12, characterized in that the microemulsion is a stable and transparent emulsion, the disperse phase thereof having an average particle size of less than 100 nm.

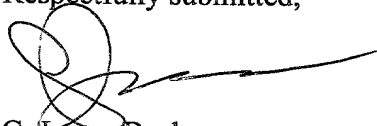
In the Abstract

On page 22, please amend the Abstract by deleting the last sentence in lines 7-9.

Clean Version of Amended Abstract

This invention relates to microemulsions containing alkanolammonium salts of the alkylsulfates and/or alkylpolyalkyleneglycolethersulfates, water, one or more oil components, and one or more alcohols.

Respectfully submitted,



C. James Bushman
Reg. No. 24,810

Date: 8/3/01
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Fax: (713) 266-5169

CERTIFICATE OF EXPRESS MAILING

I, Jan C. Lipscomb, hereby certify that this correspondence and all referenced enclosures are being deposited by me with the United States Postal Service as Express Mail with Receipt No. EL010850625US in an envelope addressed to: Box PCT, Assistant Commissioner for Patents, Washington, DC 20231, on August 3, 2001.

By: Jan C. Lipscomb

Version with Markings to Show Changes Made

In the Title

[A MICROEMULSION CONTAINING ALKANOLAMMONIUM SALTS OF THE
ALKYLSULFATES AND/OR ALKYL POLYALKYLENEGLYCOLETHERSULFATES]

MICROEMULSION CONTAINING ALKANOLAMMONIUM SALTS OF FATTY
ALCOHOL SULFATES AND/OR ALKYL POLYALKYLENEGLYCOLETHERSULFATES

In the Abstract

This invention relates to microemulsions containing alkanolammonium salts of the
alkylsulfates and/or alkylpolyalkyleneglycolethersulfates, water, one or more oil components,
and one or more alcohols. [The invention also relates to the use thereof for cosmetic and/or
medicinal-dermatologic applications.]

09/890696

SPECIFICATION

Docket No.: Müller-27/P1361

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN that we, Michael Brock, a citizen of Germany and resident of Schermbeck, Germany; Martin Stolz, a citizen of Germany and resident of Duellen, Germany; Sabine Diesveld-Koller, a citizen of Germany and resident of Gescher, Germany; Eva-Maria Koberstein, a citizen of Germany and resident of Recklinghausen, Germany; Ursula Michel, a citizen of Germany and resident of Dorsten, Germany; and Heinz Napierala, a citizen of Germany and resident of Herten, Germany have invented new and useful improvements in a

**MICROEMULSION CONTAINING ALKANOLAMMONIUM SALTS
OF FATTY ALCOHOL SULFATES AND/OR
ALKYLPOLYALKYLENEGLYCOLETHERSULFATES**
[title as amended]

of which the following is a specification:

CERTIFICATE OF EXPRESS MAILING

I, Jan C. Lipscomb, hereby certify that this correspondence and all referenced enclosures are being deposited by me with the United States Postal Service as Express Mail with Receipt No. EL010850625US in an envelope addressed to: Box PCT, Assistant Commissioner for Patents, Washington, DC 20231, on August 3, 2001.

By: Jan C. Lipscomb

**A MICROEMULSION CONTAINING ALKANOLAMMONIUM SALTS OF THE
ALKYLSULFATES AND/OR ALKYL POLYALKYLENEGLYCOLETHERSULFATES**

5 The present invention relates to microemulsions contain-
ing alkanolammonium salts of the alkylsulfates and/or
alkylpolyalkyleneglycolethersulfates and the use thereof
for cosmetic and/or medicinal-dermatologic applications.

10 In particular, microemulsions are increasingly used for
applications in which it is desirable to simultaneously
employ an aqueous phase and an oil component. For a sur-
vey of microemulsion applications, see e.g. Chhabra, V.,
et al. in *Tensid Surf. Det.*, 34(1997), p. 156-168. In

15 said publication for example the use of microemulsions in
cleansers is described.

There is also an interest in emulsions for cosmetic and
medicinal-dermatologic applications. Compositions which

20 are intended for use both as body cleaners and body care
preparations must fulfill different requirements, e.g.
combining the cleaning properties of an aqueous surfac-
tant formulation with the cosmetic properties of an oil
component. The compositions of preparations employed both

25 as body cleaners and body care preparations are different
from conventional cleaners utilized for instance for
cleaning floors, textiles, or dishes.

Skin and hair are usually cleaned with surfactants, which

30 will effect more or less pronounced swelling and subse-
quent dehydration of the horn layer of the skin, thereby
impairing the protective mechanism of the skin

surface. Therefore, skin care components allowing regeneration of the skin are increasingly added to customary skin cleaning preparations. It is furthermore possible to add excitometabolic components to these preparations, thus improving the general condition. This is particularly true of foam bath oils, which have been commercially available lately. Besides other active ingredients, these substantially anhydrous preparations contain surfactants for cleaning the skin and a large quantity of oils for treating the skin. The disadvantage of the foam bath oils is that the major portion of the oil remains on the water surface in the bath tub, thus having only little contact with the skin and a poor regenerating effect. The oil remains largely unused in the waste water.

The facts are similar with shower oil preparations, e.g. those described in US 5,653,988 or DE 197 12 678-A1. The formulations disclosed therein are substantially anhydrous, surfactant-containing, cosmetic or dermatologic shower oils, which contain at least 45 % or 30 % of one or more oil component(s). With these products, too, the major portion of the oil components is washed away unused when taking a shower bath because the oil in the products is present in excess.

Another disadvantage of foam bath oils and shower oils is the high price of the ingredients, which contain no or only little water. Therefore, many efforts have hitherto been made to reduce the oil content, while increasing the water content, preserving the foaming power, and improving the price/performance ratio.

US 4,371,548 discloses foaming and surfactant-containing bath and shower preparations having an oil content of from 20 to 60 % and, optionally, a water content of max. 15 %. These preparations have disadvantages and further-
5 more still have a poor price/performance ratio because the water content is kept low in order to preserve the desirable properties (good cleaning of the skin, good foaming power, intense skin care effect).

10 The type of oil component, the amount used in a formulation, the percentage of the aqueous phase and its composition are frequently predetermined by the requirements of the individual fields of application. While the expert knows how to select an appropriate surfactant from among
15 the large variety of commercially available products for making a macroemulsion, the manufacture of a microemulsion presents considerable problems because the phase areas of an oil-water-surfactant blend, wherein a macroemulsion is formed, are considerably larger than those in
20 which microemulsions are formed.

Numerous attempts were made in the past to manufacture preparations, which are both body cleaners and body care products. The terms "body cleaner" and "body care
25 product" used herein shall mean any product employed for cleaning and treating hair and/or skin during showering, washing, or bathing.

When employing the compositions of the present invention
30 for cosmetic and medicinal-dermatologic applications, it has been surprisingly discovered that the microemulsions of the invention are capable of combining the cleaning properties of an aqueous surfactant formulation and the

cosmetic properties of an oil component, thereby effecting better spreading of the cosmetic oil component on the skin as a result of the fine dispersion of the oil droplets in the microemulsion.

5

When formulating cosmetic or medicinal-dermatologic preparations, the problem is aggravated by the fact that the surfactants employed for making the microemulsions should be non-irritant to the skin, the selection of a suitable surfactant thus being more difficult.

The microemulsions described in literature mostly comprise nonionic surfactants, e.g. alcohol ethoxylates. When using these surfactants in preparations intended for application to human skin, they have the disadvantage to cause intolerably high defatting of the skin. Anionic surfactants often require co-emulsifiers to make microemulsions.

Microemulsions containing alkylpolyalkyleneglycolethersulfates or alkylsulfates are known per se.

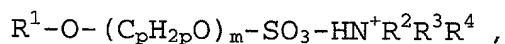
DE 35 34 733 A1 discloses foaming surfactant preparations with clear-solubilized, water-insoluble oil components, which are usually termed microemulsions. In said publication it is explicitly pointed out that lower alcohols or alkylglycols having C₁- to C₄-alkyl groups need not be employed. EP 0 638 634 A2 discloses surfactant microemulsions as all-purpose cleaners, which inevitably contain surfactants of the sulfonate type. However, such surfactants are inappropriate for cosmetic applications.

It was the object of the present invention to solve the
aforementioned problems observed when formulating
cosmetic and medicinal-dermatologic microemulsions by
providing surfactants for the preparation of
5 microemulsions having an oil content of max. 20 %, a high
water content, and a surfactant content as low as
possible.

It has surprisingly been found that cosmetic and
10 medicinal-dermatologic preparations, especially bath and
shower preparations, but also liquid soaps and shampoos
presenting the required characteristics can be formulated
as microemulsions having a lower oil content and a higher
water content.

15 The subject matter of the invention relates to micro-
emulsions containing

(A) 0.5 to 70 % by weight of alkanolammonium salts of
the alkylsulfates and/or alkylpolyalkyleneglycol-
20 ethersulfates having the following structure



where

R^1 = is a C_8 - to C_{20} -hydrocarbon residue,
p = is an integer from 2 to 5, where p can
25 be different for each m,

R^2 = H, a C_1 - to C_6 -alkyl, or a C_2 - to C_4 -
hydroxyalkyl,

R^3 = H, a C_1 - to C_6 -alkyl, or a C_2 - to C_4 -
hydroxyalkyl,

30 R^4 = a C_2 - to C_4 -hydroxyalkyl, preferably a
 C_3 -hydroxypropyl, and

m = is an integer from 0 to 7,

(B) 20 to 95 % by weight of water,

- (C) 0.1 to 20 % by weight of one or more oil component(s), and
- (D) 0.1 to 20 % by weight, preferably 0.1 to 15 % by weight of one or more mono- or polyhydric,
5 preferably mono-, di-, or trihydric C₂- to C₂₄-alcohol(s), preferably C₂- to C₆-alcohol(s).

Moreover, the microemulsions of the subject invention can contain at least one of the following components:

- 10 (E) 0 to 20 % by weight, preferably 3 to 15 % by weight of one or more additional surfactant(s)
- (F) 0 to 20 % by weight, preferably 1 to 12 % by weight, or 3 to 12 % by weight of one or more electrolyte(s), and
- 15 (G) 0 to 10 % by weight, preferably 0.1 to 8 % by weight of one or more additive(s).

More advantageously, the microemulsions contain the abovementioned components independently of one another in
20 the quantities set forth hereinbelow:

- (A) 2 to 60 % by weight, preferably 20 to 40 % by weight,
- (B) 30 to 80 % by weight, preferably 40 to 60 % by weight,
- 25 (C) 0.5 to 15 % by weight, preferably 4 to 10 % by weight,
- (D) 0.1 to 9 % by weight, preferably 0.5 to 9 % by weight,
- (E) 0 to 20 % by weight, preferably 3 to 15 % by weight
30 of additional surfactants,
- (F) 0 to 20 % by weight, preferably 1 to 12 % by weight of electrolytes, and

(G) 0 to 10 % by weight, preferably 0.1 to 8 % by weight of additives,

wherein furthermore most advantageously:

(E) as an additional surfactant is a triglyceride alkoxyated with ethyleneoxide and/or propyleneoxide and subsequently esterified, wholly or in part, with C₆- to C₂₂-fatty acids, and/or

(G) as at least one additive is a poly(C₂- to C₄-)alkyleneglycol having a molecular weight of up to 1,500 g/mole.

Contrary to emulsions, the microemulsions of the present invention are thermodynamically stable, optically transparent, macroscopically homogeneous mixtures of two liquids, which are incapable of being mixed with each other, namely, water (B) and an oil component (C) to which the surfactant molecules mentioned above under (A) were added. The microemulsions of the invention can be prepared, for example, at temperatures ranging from 20 to 80 °C, preferably below 55 °C. They are stable up to 60 °C. The average particle size of the dispersed phase is preferably less than 100 nm.

The microemulsions as claimed herein normally do not form mesomorphous phases within a wide range of compositions. They are most suitable for cosmetic and/or medicinal-dermatologic applications. In particular, they are employed as or in body cleaners or body care preparations.

The microemulsions according to the present invention are low-priced preparations, which can be readily manufactured. They are distinguished by good foaming power and high deterative efficiency. Owing to the oil content, said

microemulsions have a regenerating effect on the general condition of the skin, reduce the feeling of dryness of the skin, and make the skin supple.

5 The compositions according to the present invention most preferably contain alkanolammonium salts of the alkyl-sulfates and/or alkylpolyalkyleneglycolethersulfates of the aforesaid general structure. Preferably, they have independently of one another the following radicals:

- 10 $R^1 = C_{12}$ - to C_{16} -alkyl, the alkyl residue being linear and saturated,
- $p = 2$ or 3 , where p can be different for each m ,
- $R^2 = H$ or hydroxyisopropyl,
- $R^3 = H$ or hydroxyisopropyl,
- 15 $R^4 =$ hydroxyisopropyl, and
- $m = 0, 1, \text{ or } 2.$

Advantageous embodiments of the present invention with respect to the components (C) to (G) are set forth
20 hereinbelow.

Oil Component (C)

The oil components of the present invention are advantageously chosen from the group of lecithins and the group
25 of mono-, di-, and/or triglycerides of saturated and/or unsaturated, branched and/or linear alkylcarboxylic acids having chain lengths of from 8 to 24, particularly from 12 to 18 carbon atoms. The fatty acid triglycerides can
30 advantageously be synthetic, semisynthetic, or natural oils, such as soya oil, castor oil, olive oil, safflower oil, wheatgerm oil, grapeseed oil, sunflower oil, peanut oil, almond oil, palm oil, coconut oil, thistle oil, evening primrose oil, rape oil, etc.

The oil component can furthermore comprise vaseline, paraffin oil, and polyolefins. Moreover, the oil components according to the present invention can advantageously be selected from the group of esters of saturated and/or unsaturated, branched and/or linear alkylcarboxylic acids having chain lengths of from 3 to 30 carbon atoms and of saturated and/or unsaturated, branched and/or linear alcohols having chain lengths of from 3 to 30 carbon atoms. It is furthermore advantageous to select the oil components from the group of esters of aromatic carboxylic acids and saturated and/or unsaturated, branched and/or linear alcohols having chain lengths of from 3 to 30 carbon atoms, which ester oils can advantageously be chosen from the group of isopropyl myristate, isopropyl palmitate, isopropyl stearate, isopropyl oleate, n-butyl stearate, n-hexyl laurate, n-decyl oleate, isooctylstearate, isononylstearate, isononylisononanoate, 2-ethylhexylpalmitate, 2-ethylhexyllaurate, 2-hexyldecylstearate, 2-octyldodecylpalmitate, oleyl oleate, oleyl erucate, erucyl oleate, erucyl erucate, and synthetic, semisynthetic, and natural mixtures of such esters, e.g. jojoba oil.

Furthermore, the oil component can advantageously be selected from the group of branched and linear hydrocarbons and hydrocarbon waxes and silicone oils. Any mixtures of the aforesaid oil components are also advantageous within the meaning of the present invention.

30 Alcohols (D)

The microemulsions claimed herein contain mono- or polyhydric, preferably mono-, di-, or trihydric C₂- to C₂₄-alcohols, preferably saturated and/or branched and/or

linear alcohols. Examples of such alcohols include ethanol, propanol, isopropyl alcohol, butanol, pentanol, hexanol, heptanol, octanol, 2-ethylhexanol, lauryl alcohol, myristol alcohol, palmityl alcohol, steryl alcohol, oleyl alcohol, elaidyl alcohol, guerbet alcohols, and alkylene glycols, such as ethylene glycol, propylene glycol, and glycerol. Propylene glycol is particularly preferred.

Other Surfactants (E)

In addition to the abovementioned alkanolammonium salts of the alkylsulfates and/or alkylpolyalkyleneglycolethersulfates, the microemulsions of the present invention can contain additional surfactants, which are advantageously chosen from the group of

- alcohol polyethyleneglycolethers, e.g. of the general formula $R-O-(C_2H_4O)_n-H$, where R is a branched or linear, saturated or unsaturated C_8- to C_{20} -alkyl residue and n is a number from 2 to 20; fatty acid ester polyethyleneglycolethers, e.g. of the general formula $R-COO-(C_2H_4O)_p-H$, where R is a branched or linear, saturated or unsaturated C_7- to C_{19} -alkyl residue and p is a number from 2 to 40,
- alkyl polyalkyleneglycolethercarboxylic acids, e.g. of the general formula $R-O-(C_2H_4O)_n-CH_2-COOH$ or the alkanol ammonium salts or alkali metal salts thereof, where R is a branched or linear, saturated or unsaturated C_8- to C_{20} -alkyl residue and n is a number from 2 to 20,

- alkylamidoalkylbetains, e.g. of the general formula $R\text{-CONH}(\text{CH}_2)_u \text{N}^+(\text{CH}_3)_2\text{-CH}_2\text{-COO}^-$, where R is a branched or linear, saturated or unsaturated C₇- to C₁₉-alkyl residue and u is a number from 1 to 10,
 - products obtained from the alkoxylation of triglycerides, which are esterified, wholly or in part, with C₆- to C₂₂-fatty acids, wherein 2 to 40 moles of alkoxy-
oxylating agent are employed per mole of triglyceride, e.g. addition products of castor oil and/or dehydrated castor oil with ethyleneoxide, which are partially esterified with oleic acid.
- Preferably, the microemulsions of the invention contain no or at most only small quantities (less than 1.5 % by weight) of polyhydroxyfatty acid amides (so-called glucamides). Moreover, it is preferable that the composition of the invention contains no or at most only small amounts (less than 0.5 % by weight) of anionic surfactants of the sulfonate type.

Electrolytes (F)

- The microemulsions of the present invention may contain electrolytes. Examples thereof include alkali salts and alkaline earth salts, such as the corresponding halides, sulfates, phosphates, or citrates.

Additives (G)

- Examples of additives include poly(C₂- to C₄-)alkylene glycols, particularly polyethylene glycols and/or polypropylene glycols, each preferably with a molecular weight of up to 1,500 g/mole, fragrances, colorants,

hydrotropes, thickeners, pearlescent agents, protein hydrolysates, plant extracts, vitamins, antimicrobials and the like.

5 The following examples are merely illustrative and are not intended to constitute a limitation on the present invention. The term 'percent' shall mean 'percent by weight', based on the total weight of the respective microemulsion.

10

Example 1

	MARLINAT® 242/90 M	25 %
	MARLIPAL® 24/99	9 %
	Paraffin oil	5 %
15	NaCl	8 %
	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

Preparation

20 Mix the first three components at 80 °C to obtain a homogeneous blend. Add aqueous NaCl at the same temperature. Then add fragrance, antioxidant, and preservative at 30 °C.

Example 2

	MARLINAT® 242/90 M	30 %
	n-Hexanol	4 %
	Paraffin oil	5 %
	NaCl	4 %
30	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

Preparation: As described in Example 1.

Example 3

	MARLINAT® 242/90 M	38 %
	Paraffin oil	5 %
	NaCl	5 %
5	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

Preparation

10 Mix the first two components at 80 °C to obtain a homogeneous blend. Add aqueous NaCl at the same temperature. Then add fragrance, antioxidant, and preservative at 30 °C.

Example 4

15	MARLINAT® 242/90 M	28 %
	MARLIPAL® 24/99	9 %
	Paraffin oil	5 %
	Ampholyt JB 130 K	9 %
	NaCl	8 %
20	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

Preparation

25 Mix the first three components at 80 °C to obtain a homogeneous blend. Add aqueous NaCl and component 4 at the same temperature. Then add fragrance, antioxidant, and preservative at 30 °C.

Example 5

	MARLINAT® 242/90 M	28 %
	MARLIPAL® 24/99	9 %
5	MARLINAT® CM 105/80	5 %
	Paraffin oil	5 %
	NaCl	8 %
	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

10

Preparation

Mix the first four components at 80 °C to obtain a homogeneous blend. Add aqueous NaCl at the same temperature. Then add fragrance, antioxidant, and preservative at

15

30 °C.

Example 6

	MARLINAT® 242/90 M	30 %
	MARLIPAL® 24/70	15 %
20	Soybean oil	5 %
	NaCl	4 %
	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

25 Preparation: As described in Example 1.

Example 7

	MARLINAT® 242/90 M	30 %
	MARLIPAL® 24/70	10 %
30	Paraffin oil	5 %
	Na citrate	4 %
	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

Preparation: As described in Example 1 except that aqueous Na citrate solution is used instead of aqueous NaCl solution.

5

Example 8

	MARLINAT® 242/90 T	30 %
	MARLIPAL® 24/60	10 %
	Paraffin oil	5 %
10	NaCl	7 %
	Fragrance, antioxidant, preservative	q.s.
	Water	balance to 100 %

Preparation

- 15 Mix the first three components at 50 °C to obtain a homogeneous blend. Add aqueous NaCl solution at the same temperature. Then add fragrance, antioxidant, and preservative at 30 °C.

20 **Example 9**

	MARLINAT® 242/90 M	28 %
	LIPOXOL® 600	2 %
	MARLOWET® LVS	7 %
	Soybean oil	4 %
25	Castor oil	1 %
	MARLINAT® CM 105/80	4 %
	Ampholyt JB 130 K	5 %
	NaCl	2 %
	Fragrance, protein hydrolysate,	
30	thickener, antioxidant, preservative	q.s.
	Water	balance to 100 %

Preparation

Mix the first six components at 20 °C to obtain a homogeneous blend. Add the remaining components at the same temperature.

Example 10

	MARLINAT [®] 242/90 M	30 %
	LIPOXOL [®] 600	2 %
10	MARLOWET [®] LVS	5 %
	Soybean oil	2 %
	Paraffin oil	3 %
	MARLINAT [®] CM 105/80	4 %
	Ampholyt JB 130 K	5 %
15	NaCl	2 %
	Fragrance, protein hydrolysate, thickener, antioxidant, preservative	q.s.
	Water	balance to 100 %
20	Preparation: As described in Example 9.	

The following products of CONDEA Chemie GmbH were used in Examples 1 to 10:

30	MARLINAT [®] 242/90 M	90 % of C ₁₂ - to C ₁₄ -alkylpoly- ethyleneglycol(2 EO)ether- sulfate-monoisopropanolammonium (MIPA) salt in 1,2-propylene- glycol
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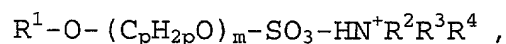
5	MARLINAT® 242/90 T	90 % of C ₁₂ - to C ₁₄ -alkylpoly- ethyleneglycol(2 EO)ether- sulfate-triisopropanolammonium (TIPA) salt in 1,2-propylene- glycol
10	MARLIPAL® 24/60	C ₁₂ - to C ₁₄ -fatty alcohol poly- ethyleneglycol(6 EO)ether
	MARLIPAL® 24/70	C ₁₂ - to C ₁₄ -fatty alcohol poly- ethyleneglycol(7 EO)ether
15	MARLIPAL® 24/99	90 % of C ₁₂ - to C ₁₄ -fatty alcohol polyethyleneglycol(9 EO)ether in water
20	MARLINAT® CM 105/80	80 % of C ₁₂ - to C ₁₄ -alkylpoly- ethyleneglycol(10 EO)ether carboxylic acid sodium salt in water
25	MARLOWET® LVS	Ethoxylated castor oil, partial- ly esterified with oleic acid
	LIPOXOL® 600	Polyethyleneglycol 600
30	Ampholyt JB 130 K	30 % of cocoamidopropyldimethyl- betaine in water

The formulations given herein as examples are outstanding in their high cleaning and foaming power, good initial foaming power, storage stability, and mildness to the skin.

Claims

5 1. A microemulsion containing at least the following components:

(A) 0.5 to 70 % by weight alkanolammonium salts of the alkylsulfates and/or alkylpolyalkylene-glycolethersulfates having the structure:



wherein

15 R^1 = is a C_8 - to C_{20} -hydrocarbon residue,

p = is an integer from 2 to 5, wherein p can be different for each m ,

R^2 = H, a C_1 - to C_6 -alkyl, or a C_2 - to C_4 -hydroxyalkyl,

20 R^3 = H, a C_1 - to C_6 -alkyl, or a C_2 - to C_4 -hydroxyalkyl,

R^4 = a C_2 - to C_4 -hydroxyalkyl, and

m = is an integer from 0 to 7,

or mixtures thereof

25 (B) 20 to 95 % by weight water, and

(C) 0.1 to 20 % by weight one or more oil component(s), and

30 (D) 0.1 to 20 % by weight of one or more mono- or polyvalent C_2 - to C_{24} -alcohol(s),

each based on the total composition.

2. Microemulsion according to claim 1, wherein the alkanolammonium salts of the alkylsulfates and/or alkylpolyalkyleneglycolethersulfates comprise the following residue or indices:

R^1 = a linear or saturated C_{12} - to C_{16} -alkyl residue,

p = 2 or 3, wherein p can be different for each m ,

R^2 = H or hydroxyisopropyl,

R^3 = H or hydroxyisopropyl,

R^4 = hydroxyisopropyl, and

m = is an integer from 0 to 2.

3. Microemulsion according to any one of the preceding claims, wherein the microemulsion contains component

(A) with 2 to 60 % by weight

(B) with 30 to 80 % by weight

(C) with 0.5 to 15 % by weight and

(D) with 0.1 to 9 % by weight.

4. Microemulsion according to any one of the preceding claims, further containing at least one of the following components

(E) 0 to 20 % by weight of one or more additional surfactant(s)

(F) 0 to 20 % by weight of one or more electrolyte(s), and

(G) 0 to 10 % by weight of one or more additive(s).

5. Microemulsion according to claim 4 containing at least one of the following components

- 5 (E) as at least one additional surfactant, triglycerides alkoxyated with ethyleneoxide and/or propyleneoxide and subsequently esterified, wholly or in part, with C₆- to C₂₂-fatty acids, and
- 10 (G) as at least one additive, poly(C₂- to C₄-) alkylene glycols having a molecular weight of up to 1,500 g/mole.

- 15 6. Microemulsion according to any one of the preceding claims, wherein the oil component (C) contains one or more components selected from the group of lecithins; of mono-, di-, and/or triglycerides of saturated and/or unsaturated, branched and/or
- 20 linear carboxylic acids having chain lengths of from 8 to 24 carbon atoms; branched and/or linear hydrocarbons; waxes; vaseline; paraffin oils; polyolefins; silicone oils and esters of saturated, unsaturated, and/or aromatic, branched and/or
- 25 linear carboxylic acids having chain lengths of from 3 to 30 carbon atoms and of saturated and/or unsaturated, branched and/or linear alcohols having chain lengths of from 3 to 30 carbon atoms.

- 30 7. Microemulsion according to any one of the preceding claims, **characterized in that** the microemulsion is a stable and transparent emulsion the disperse phase thereof having an average particle size of less than 100 nm.

8. The use of the microemulsion according to any one of the preceding claims for cosmetic and/or medicinal-dermatologic applications.
- 5 9. The use of the microemulsion according to any one of claims 1 to 7 as body cleaning and/or body care preparations.
- 10 10. The use of the microemulsion according to claim 9 for cleaning and treating hair, **characterized in that** the microemulsion contains component (C) with 0.1 to 2 % by weight.

Docket No.
Muller-27

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Microemulsion Containing Alkanolammonium Salts of Fatty Alcohol Sulfates and/or Alkylpolyalkyleneglycolethersulfates

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on August 3, 2001 as United States Application No. or PCT International Application Number 09/890,696

and was amended on _____

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

19904847.9

Germany

8 February 1999

☐

(Number)

(Country)

(Day/Month/Year Filed)

☐

(Number)

(Country)

(Day/Month/Year Filed)

☐

(Number)

(Country)

(Day/Month/Year Filed)

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

PCT/DE00/00357

7 February 2000

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

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